

WHAT IS CLAIMED IS:

1. A method of reproducing a process cartridge that is detachably attachable to the body of an electrophotographic image forming apparatus and
5 comprises an electrophotographic photosensitive drum, a charging unit for charging the electrophotographic photosensitive drum, and a development unit for developing a latent image formed on the electrophotographic photosensitive drum using a
10 development roller, wherein the electrophotographic photosensitive drum and the charging unit are attached to the development unit, the method comprising:

(a) a side plate removing step of removing
15 first and second side plates disposed to the process cartridge at both the ends thereof in a lengthwise direction;

(b) a charging unit removing step of removing the charging unit from the development unit;

20 (c) an electrophotographic photosensitive drum removing step of removing the electrophotographic photosensitive drum from the development unit;

(d) a shaft extracting step of extracting a shaft from the electrophotographic photosensitive
25 drum;

(e) a shaft inserting step of inserting a shaft into a new electrophotographic photosensitive drum;

(f) an electrophotographic photosensitive drum
attaching step of attaching the new
electrophotographic photosensitive drum to the
development unit;

5 (g) a charging unit attaching step of attaching
the charging unit to the development unit to which
the electrophotographic photosensitive drum is
attached; and

 (h) a positioning step of attaching the first
10 and second side plates to the development unit to
which the electrophotographic photosensitive drum and
the charging unit are attached, positioning the
development unit and the charging unit by the first
side plate as well as supporting the
15 electrophotographic photosensitive drum movably in a
direction perpendicular to the lengthwise direction,
and positioning the development unit, the charging
unit and the electrophotographic photosensitive drum
by the second side plate.

20

2. A method of reproducing a process cartridge
that is detachably attachable to the body of an
electrophotographic image forming apparatus and
comprises an electrophotographic photosensitive drum,
25 a charging unit for charging the electrophotographic
photosensitive drum, and a development unit for
developing a latent image formed on the

electrophotographic photosensitive drum using a development roller, wherein the electrophotographic photosensitive drum and the charging unit are attached to the development unit, the method

5 comprising:

(a) a side plate removing step of removing first and second side plates disposed to the process cartridge at both the ends thereof in a lengthwise direction;

10 (b) a charging unit removing step of removing the charging unit from the development unit;

(c) an electrophotographic photosensitive drum removing step of removing the electrophotographic photosensitive drum from the development unit;

15 (d) an electrophotographic photosensitive drum attaching step of attaching a new electrophotographic photosensitive drum to the development unit;

(e) a charging unit attaching step of attaching the charging unit to the development unit to which
20 the electrophotographic photosensitive drum is attached; and

(f) a positioning step of attaching the first and second side plates to the development unit to which the electrophotographic photosensitive drum and
25 the charging unit are attached, positioning the development unit and the charging unit by the first side plate as well as supporting the

electrophotographic photosensitive drum movably in a direction perpendicular to the lengthwise direction, and positioning the development unit, the charging unit and the electrophotographic photosensitive drum
5 by the second side plate.

3. A method of reproducing a process cartridge according to claims 1 and 2, wherein, at the charging unit removing step and the electrophotographic
10 photosensitive drum removing step, the attitude of the process cartridge is set in a direction which permits the electrophotographic photosensitive drum to be placed on an interval guarantee member for regulating the intervals between the development
15 roller and the electrophotographic photosensitive drum, a frame for supporting the development roller, and a supporting member for rotatably supporting the development roller.

20 4. A method of reproducing a process cartridge according to claims 1 and 2, wherein, at the electrophotographic photosensitive drum attaching step and the charging unit attaching step, the attitude of the process cartridge is set in a
25 direction which permits the electrophotographic photosensitive drum to be placed on an interval guarantee member for regulating the intervals between

the development roller and the electrophotographic photosensitive drum, a frame for supporting the development roller, and a supporting member for rotatably supporting the development roller.

5

5. A method of reproducing a process cartridge according to claims 1 and 2, wherein, at the electrophotographic photosensitive drum attaching step, the first side plate is incompletely attached
10 to the development unit to which the electrophotographic photosensitive drum is attached, and the electrophotographic photosensitive drum is tentatively fixed to the development unit by the first side plate.

15

6. A method of reproducing a process cartridge according to claims 1 and 2, wherein, at the charging unit attaching step, a brush member attached to the charging unit is cleaned before the charging unit is
20 attached.

7. A method of reproducing a process cartridge according to claims 1 and 2, wherein, at any of the steps, a memory element, which has a communication
25 antenna and communication means capable of communicating with communication means fixedly disposed to the body of the image forming apparatus

in a non-contact state, is replaced with a memory element having different information.

8. A method of reproducing a process cartridge
5 that is detachably attachable to the body of an electrophotographic image forming apparatus and comprises an electrophotographic photosensitive drum, a charging unit for charging the electrophotographic photosensitive drum, and a development unit for
10 developing a latent image formed on the electrophotographic photosensitive drum using a development roller, wherein the electrophotographic photosensitive drum and the charging unit are attached to the development unit, the method
15 comprising:

(a) a side plate removing step of removing first and second side plates disposed to the process cartridge at both the ends thereof in a lengthwise direction;

20 (b) a charging unit removing step of removing the charging unit from the development unit;

(c) an electrophotographic photosensitive drum removing step of removing the electrophotographic photosensitive drum from the development unit;

25 (d) a cover member removing step of removing a cover member for covering the surface of the development roller except the portion thereof facing

the electrophotographic photosensitive drum and holding a sheet member in contact with the electrophotographic photosensitive drum in the lengthwise direction, from the development unit;

5 (e) a pin member extracting step of extracting first and second pin members for fixing bearings that rotatably support the development roller at both the ends thereof, from the development unit;

 (f) a regulation member removing step of
10 removing a regulation member for regulating the angle in a rotational direction of a magnet roller included in the development roller, from the development unit;

 (g) a development roller removing step of removing the development roller from the development
15 unit;

 (h) a developing agent in development unit evacuating step of evacuating the developing agent in the development unit from the opening of the development unit that appears when the development
20 roller is removed;

 (i) a developing agent deposited on development roller removing step of removing the developing agent deposited on the development roller;

 (j) a developing agent filling step of filling
25 new developing agent from the opening of the development unit;

 (k) a development roller attaching step of

attaching the development roller to the development unit;

(l) a regulation member attaching step of attaching the regulation member;

5 (m) a pin member attaching step of attaching the first and second pin members to the development unit;

(n) a cover member attaching step of attaching the cover member to the development unit;

10 (o) an electrophotographic photosensitive drum attaching step of attaching the electrophotographic photosensitive drum to the development unit;

(p) a charging unit attaching step of attaching the charging unit to the development unit to which
15 the electrophotographic photosensitive drum is attached;

(q) a positioning step of attaching the first and second side plates to the development unit to which the electrophotographic photosensitive drum and
20 the charging unit are attached, positioning the development unit and the charging unit by the first side plate as well as supporting the electrophotographic photosensitive drum movably in a direction perpendicular to the lengthwise direction,
25 and positioning the development unit, the charging unit and the electrophotographic photosensitive drum by the second side plate.

9. A method of reproducing a process cartridge that is detachably attachable to the body of an electrophotographic image forming apparatus and comprises an electrophotographic photosensitive drum,
5 a charging unit for charging the electrophotographic photosensitive drum, and a development unit for developing a latent image formed on the electrophotographic photosensitive drum using a development roller, wherein the electrophotographic
10 photosensitive drum and the charging unit are attached to the development unit, the method comprising:

(a) an open/close shutter opening step of opening the open/close shutter of a developing agent
15 replenishing port disposed to the development unit;

(b) a first developing agent in development unit evacuating step of evacuating the developing agent in the development unit from the developing agent replenishing port whose open/close shutter is
20 opened;

(c) an open/close shutter closing step of closing the open/close shutter;

(d) a side plate removing step of removing first and second side plates disposed to the process
25 cartridge at both the ends thereof in a lengthwise direction;

(e) a charging unit removing step of removing

the charging unit from the development unit;

(f) an electrophotographic photosensitive drum removing step of removing the electrophotographic photosensitive drum from the development unit;

5 (g) a cover member removing step of removing a cover member for covering the surface of the development roller except the portion thereof facing the electrophotographic photosensitive drum and holding a sheet member in contact with the
10 electrophotographic photosensitive drum in the lengthwise direction, from the development unit;

(h) a pin member extracting step of extracting first and second pin members for fixing bearings that rotatably support the development roller at both the
15 ends thereof, from the development unit;

(i) a regulation member removing step of removing a regulation member for regulating the angle in a rotational direction of a magnet roller included in the development roller, from the development unit;

20 (j) a development roller removing step of removing the development roller from the development unit;

(k) a second developing agent in development unit evacuating step of evacuating the developing agent in the development unit from the opening of the
25 development unit that appears when the development roller is removed;

(l) a developing agent deposited on development roller removing step of removing the developing agent deposited on the development roller;

(m) a developing agent filling step of filling
5 new developing agent from the opening of the development unit;

(n) a development roller attaching step of attaching the development roller to the development unit;

10 (o) a regulation member attaching step of attaching the regulation member;

(p) a pin member attaching step of attaching the first and second pin members to the development unit;

15 (q) a cover member attaching step of attaching the cover member to the development unit;

(r) an electrophotographic photosensitive drum attaching step of attaching the electrophotographic photosensitive drum to the development unit;

20 (s) a charging unit attaching step of attaching the charging unit to the development unit to which the electrophotographic photosensitive drum is attached; and

(t) a positioning step of attaching the first
25 and second side plates to the development unit to which the electrophotographic photosensitive drum and the charging unit are attached, positioning the

development unit and the charging unit by the first side plate as well as supporting the electrophotographic photosensitive drum movably in a direction perpendicular to the lengthwise direction, and positioning the development unit, the charging unit and the electrophotographic photosensitive drum by the second side plate.

10. A method of reproducing a process cartridge according to claims 8 and 9, wherein, at the charging unit removing step, the electrophotographic photosensitive drum removing step, the cover member removing step, the pin member extracting step, the regulation member removing step, and the development roller removing step, the attitude of the process cartridge is set in a direction which permits the electrophotographic photosensitive drum to be placed on an interval guarantee member for regulating the intervals between the development roller and the electrophotographic photosensitive drum, a frame for supporting the development roller, and a supporting member for rotatably supporting the development roller.

11. A method of reproducing a process cartridge according to claims 8 and 9, wherein, at the regulation member attaching step, the pin member

attaching step, the cover member attaching step, the electrophotographic photosensitive drum attaching step, and the charging unit attaching step, the attitude of the process cartridge is set in a
5 direction which permits the electrophotographic photosensitive drum to be placed on an interval guarantee member for regulating the intervals between the development roller and the electrophotographic photosensitive drum, a frame for supporting the
10 development roller, and a supporting member for rotatably supporting the development roller.

12. A method of reproducing a process cartridge according to claims 8 and 9, wherein, at the
15 electrophotographic photosensitive drum attaching process, the first side plate is attached up to a midpoint of the development unit to which the electrophotographic photosensitive drum is attached, and the electrophotographic photosensitive drum is
20 tentatively fixed to the development unit by the first side plate.

13. A method of reproducing a process cartridge according to claims 8 and 9, wherein, at the charging
25 unit attaching step, a brush member attached to the charging unit is cleaned before the charging unit is attached.

14. A method of reproducing a process cartridge according to claims 8 and 9, wherein, at the developing agent deposited on development roller removing step, the development roller is replaced
5 with a new development roller.

15. A method of reproducing a process cartridge according to claims 8 and 9, wherein the cover member removing step, the pin member extracting step, and
10 the regulation member removing step are executed in random order.

16. A method of reproducing a process cartridge according to claims 8 and 9, wherein the regulation
15 member attaching step, the pin member attaching step, and the cover member attaching step are executed in random order.

17. A method of reproducing a process cartridge
20 according to claims 8 and 9, wherein, at any of the steps, a memory element, which has a communication antenna and communication means capable of communicating with communication means fixedly disposed to the body of the image forming apparatus
25 in a non-contact state, is replaced with a memory element having different information.

18. A method of reproducing a process cartridge according to claims 8 and 9, wherein the open/close shutter opening step, the first developing agent in development unit evacuating step, and the shutter
5 closing open/close process may be executed at any time prior to the development roller removing step.

19. A method of reproducing a process cartridge that is detachably attachable to the body of an
10 electrophotographic image forming apparatus and comprises an electrophotographic photosensitive drum, a charging unit for charging the electrophotographic photosensitive drum, and a development unit for developing a latent image formed on the
15 electrophotographic photosensitive drum using a development roller, wherein the electrophotographic photosensitive drum and the charging unit are attached to the development unit, the method comprising:

20 (a) an open/close shutter opening step of opening the open/close shutter of a developing agent replenishing port disposed to the development unit;

(b) a first developing agent in development unit evacuating step of evacuating the developing
25 agent in the development unit from the developing agent replenishing port whose the open/close shutter is opened;

(c) a developing agent filling step of filling new developing agent from the developing agent replenishing port; and

(d) an open/close shutter closing step of
5 closing the open/close shutter.

20. A method of reproducing a process cartridge according to claim 19, wherein, at any of the steps, a memory element, which has a communication antenna
10 and communication means capable of communicating with communication means fixedly disposed to the body of the image forming apparatus in a non-contact state, is replaced with a memory element having different information.